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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,681	11/30/2001	Alain E. Perregaux	D/A1232	4178

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EXAMINER	
VINH, LAN	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/996,681	PERREGAUX ET AL.	
	Examiner	Art Unit	
	Lan Vinh	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10-26* is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Tohyama et al (US 6,515,309)

Tohyama discloses a method of manufacturing LED chip comprises the steps of:

using dry etch to etch a separation groove/U-groove 7 in the semiconductor wafer substrate 20 (col 7, lines 11-13, col 14, lines 41-42; fig. 12B)

dicing/sawing the semiconductor wafer along groove 7 where one edge of dicing saw 22 aligns with the bottom of groove 7 and reaches the bottom surface of the groove/coextensive with the bottom of groove 7 (col 14, lines 11-38, fig. 3B; fig. 12B)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tohyama et al (US 6,515,309) in view of Bondur et al (US 4,726,879)

Tohyama's method has been described above. Unlike the instant claimed invention as per claim 2, Tohyama fails to disclose the step of dry etching using a combination of SF6 and oxygen.

However, Bondur discloses a method for dry etching trenches/groove in semiconductor substrate comprises the step of dry etching a trench using a combination of SF6 and oxygen (col 5, lines 31-33; col 6, lines 10-11)

Hence, one skilled in the art would have found it obvious to modify Tohyama's step of dry etching the groove by dry etching using a combination of SF6 and oxygen as per Bondur because Bondur teaches that the gas mixture of SF6 and oxygen would facilitate a high etch rate ratio of semiconductor to insulator while providing excellent controllability of the etching process (col 5, lines 43-45)

5. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tohyama et al (US 6,515,309) in view of Bondur et al (US 4,726,879) and further in view of MacDonald, Jr et al (US 6,184,570))

Tohyama as modified by Bondur has been described above. Unlike the instant claimed invention as per claims 3, 6, Tohyama and Bondur does not specifically disclose that the semiconductor wafer substrate comprises of amorphous silicon, silicon on insulator.

MacDonald discloses a method for forming semiconductor dies comprises the step of forming semiconductor dies from silicon and silicon on insulator (col 4, lines 30-35)

Hence, one skilled in the art would have found it obvious to modify Tohyama and Bondur method by forming the semiconductor substrate from silicon and silicon on insulator as per MacDonald because MacDonald states that the integrated die may be fabricated of monocrystalline silicon or may include an active substrate including SOI substrate (col 4, lines 29-35)

Regarding claims 4-5, Tohyama discloses forming a substrate of GaAsP/group III-V compound (col 6, lines 30-32)

6. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tohyama et al (US 6,515,309) in view of Bondur et al (US 4,726,879) and further in view of Sherre et al (US 6 363,201)

Tohyama as modified by Bondur has been described above. Unlike the instant claimed invention as per claims 7-9, Tohyama and Bondur fail to disclose the specific dimensions (depth and width) of the groove.

However, Sherrer discloses a method for forming semiconductor chip comprises the step of forming the wick stop trench 26 /U-shaped grooves in the range of 5 microns (col 3, lines 57-60)

Hence, one skilled in the art would have found it obvious to modify Tohyama and Bondur by forming the U-shaped trench/groove having the dimensions as taught per

Sherrer because according to Sherrer a wick stop trench/U-shaped trench can have a wide range of depth and widths (col 3, lines 35-37)

Allowable Subject Matter

7. Claims 10-26 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claims 10, 21, the cited prior art of record fails to disclose a method for dicing die comprises the step of etching by way of a second dry etch a U-groove in the opening down to the surface of the semiconductor wafer created by the first dry etch. The closest cited prior art of Kosaki (US 5,998,238) discloses a method for fabricating semiconductor chip comprises the step of second wet etch a U-groove 2 in the opening down to the surface of the semiconductor wafer created by the first dry etch (col 25, lines 7-10)

Response to Arguments

8. Applicant's arguments filed 12/17/2004 have been fully considered but they are not persuasive.

Applicants argue that Tohyama does not teach a "U" shape groove because Tohyama teaches "a separation groove 7 having a cross section of a reverse mesa shape" and thus Tohyama teaches away from using a U-groove. This argument is unpersuasive because although it is true that Tohyama teaches "a separation groove 7 having a cross section of a reverse mesa shape", it is also true that Tohyama teaches a

separation groove/diced groove 7 having U-shaped as depicted in fig. 12B and col 14, lines 42-44. It is also noted that a reference may be relied upon for all that it would have reasonably suggested to onehaving ordinary skill the art, including nonpreferred embodiments. Merck & Co. v.Biocraft Laboratories, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). See also Celeritas Technologies Ltd. v. Rockwell International Corp., 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir.1998) (The court held that the prior art anticipated the claims even though it taught away from the claimed invention

Applicants also argue that Tohyama fails to teach "etching a U-groove via a dry etch in the semiconductor wafer" because the drawing fig. 12B cited by the examiner depicts a deep diced groove as provided by a diamond blade, and not as wet or dry etched , nor isit a U-groove. The examiner disagrees because fig. 12B depicts a U-shaped diced groove 7, the groove 7 is also described as separation groove 7 (col 14, lines 41-43) and the separation groove 7 is formed by dry etching as described in col 7, lines 11-13 of Tohyama. It is noted that PATENTS ARE RELEVANT AS PRIOR ART FOR ALL THEY CONTAIN "The use of patents as references is not limited to what the patentees describe as theirown inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain." In re Heck, 699 F.2d 1331, 1332-33,216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting In re Lemelson, 397 F.2d 1006,1009, 158 USPQ 275, 277 (CCPA 1968)). Thus, the examiner asserts that Tohyama teaches "etching a U-groove via a dry etch in the semiconductor wafer", as required in claim 1.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LV
February 18, 2005